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CANADIAN ARCHITECT AND BUILDER

VOL. IV.

1891:

C. H. MORTIMER, PUBLISHER,
TORONTO--CANADA.

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201

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NOTE.—It has been discovered in preparing this Index, that by an error in printing, the paging of the November number is identical with that of October. To overcome the confusion to which this unfortunate occurrence must have given rise, the pages in the October number have been marked "A" and those in the November number, "B."

CANADIAN ARCHITECT AND BUILDER.

VOL. IV.—No. I.

TORONTO AND MONTREAL, CANADA, JANUARY, 1891.

PRICE 20 CENTS
\$2.00 PER YEAR.

—THE— CANADIAN ARCHITECT AND BUILDER,

A Monthly Journal of Modern Constructive Methods,

(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD),

PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF
ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS,
DECORATORS, BUILDERS, CONTRACTORS, AND MANU-
FACTURERS OF AND DEALERS IN BUILDING
MATERIALS AND APPLIANCES.

C. H. MORTIMER, Publisher,

14 King Street West, - TORONTO, CANADA.

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SUBSCRIPTIONS.

The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for \$2.00 per year. The price to subscribers in foreign countries, is \$2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, it will be continued until instructions to discontinue are received and all arrearages paid.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The "Canadian Architect and Builder" is the official paper of the Architectural Associations of Ontario and Quebec.

The publisher desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

WE observe by the daily papers that the Building Committee of the University of Toronto has adopted plans for the new Library building. But we are sorry to notice that from motives of economy, so called, they instructed the architect to cut \$10,000 off the estimated cost by designing plainer elevations. As the site is to be quite as prominent as that of the main building, being the east side of the Campus, it will be a serious mistake to so mutilate the design as to make the building in any marked degree inferior to the main structure. If there has been any advance in architecture since the days of the first building, surely here is an opportunity of exhibiting it. If the committee pursues a cheese-paring policy in this respect, they will call down upon themselves the execrations of lovers of art in architecture for generations to come.

IT is yet too early to speak with any degree of certainty concerning the building outlook for 1891. It is, however, worthy of note, that the approaching spring is being looked forward to with a hopeful feeling. Anticipations of a fairly active season are based on the belief that many of the building enterprises designed to be undertaken last year, but which were withdrawn owing to the strike, will be carried out the present year. The falling off in architects' incomes last year, in some instances to the extent of thirty and forty per cent., is conclusive evidence of the effect of the strike in diminishing the volume of business for the season. The belief that much of the work thus prevented from being done in 1890 will go forward in 1891 seems to be a reasonable one. The prospects for the coming season, therefore, so far as they are discernible at this distance, appear to be of an encouraging character.

ONE of our esteemed American contemporaries observes that "one of the exponents of mind in this age, as manifest in its current architecture, is shown by a grasping after effects that come by the power of mere size, or the prodigious." The new Parliament buildings now being erected in Queen's Park, Toronto, will alone suffice to illustrate the truth of the above idea. Covering, as they do, several acres of ground, and being planned on an enormous scale, it would be impossible for them not to be conspicuous, but they are altogether wanting in those features of artistic interest which, when embodied in the designs of public buildings, are a perpetual source of pleasure to the refined, and an educative influence on the masses. The President of the Toronto Art Students' League, in a paper on "Art Education in Canada," published on another page, laments the common-place character of the carving, which is intended to ornament the exterior of this structure. It should be borne in mind, however, that the use of ornament of a higher order would obviously be incongruous with the design from which the buildings are being constructed.

A YOUNG correspondent makes use of our columns to express, in a good-natured way, his opinion that the first annual dinner of the Toronto Architectural Sketch Club would have been more enjoyable had certain features of the proceedings to which he refers been omitted. We sympathize, to a certain extent, with this opinion. The students and their interests might properly have received a larger share of attention from the speakers. In fact some of the speech-making might well have been laid on the shoulders of the younger members of the Club, an expression of whose opinions would have been valuable as indicating what is likely to be the standard of practice of the succeeding generation of architects. It would be too much to expect perfection to mark the first undertaking of this kind. On the whole the Club deserves to be heartily congratulated on the pleasure and profit which marked the occasion, the annual recurrence of which will be looked forward to with pleasant anticipation. Such re-unions serve to bring together representatives of kindred interests, and to strengthen individual aspiration and the national spirit.

THE proposal to secure additional park accommodation from the University authorities is strongly opposed by many of the citizens of Toronto who think, not only that the exchange for the Front Street property will not be in the interest of the city from a financial point of view, but that we need a number of smaller parks and recreation grounds, rather than an increase of the size of Queen's Park, which is already sufficient for the needs of as many as can conveniently reach it. What we urgently need is a system or series of public play grounds, so located that the children of any locality may reach one in say five minutes from their respective homes. In connection with this may be mentioned the suggestion of the Public Places Association, of which Mr. O. A. Howland is President, viz., the possibility of securing the present Upper Canada College site. There would be space at its west end for a magnificent playground, while the east end is already a park with well-grown trees. The buildings could well be utilized for museum and art purposes. The city has at present no proper accommodation for art schools. Here is a place ready at hand, and which would suffice for years. After a time it might be possible to erect buildings worthy of the city, and which would properly house our art, historical, musical and scientific societies.

THE Bill to incorporate the Province of Quebec Association of Architects has passed the Legislature, but like its predecessor in Ontario, is but a skeleton of its original form. The members of the Quebec Association have secured only the right to call themselves "Registered Architects," with a legal tariff, etc. A copy of the measure has reached us, but too late to allow of its being printed in the present number.

INQUISITIVENESS is a good thing if exercised within proper limits. Unfortunately it has in some degree come to be regarded as a characteristic worthy only of reprobation, because of its abnormal development in certain individuals. This may or may not be accountable for the fact that so little use is made of the columns of the CANADIAN ARCHITECT AND BUILDER by subscribers and readers for the purpose of making enquiries regarding matters with which they desire to become more familiar. Few indeed there are so thoroughly posted as not to be in need of information on some subject appertaining to the profession or calling in which they are engaged. It may reasonably be assumed that architects and builders are no exception to this rule. Asking questions is one of the speediest methods of obtaining knowledge on any subject. We should be pleased therefore to receive and publish questions from our readers relating to methods of construction and kindred subjects coming legitimately within the scope of this journal. Without laying claim to the possession of any extraordinary degree of knowledge we nevertheless promise to exhaust all the sources of information at command in an endeavor to satisfy any demands for information which may be made upon us as the result of extending this invitation. The reward for any efforts put forth with this object would come to us in the interest and value to our readers which would attach to the publication of questions and answers of this character. Now bring on your questions!

THE directors of the Columbian Exposition at Chicago have set an example of wisdom in the manner in which they have gone about the solution of the architectural portion of that gigantic undertaking. It will be remembered that Messrs. Burnham & Root were appointed consulting architects, with Olmstead & Co. consulting landscape architects, and Mr. Gottlieb consulting engineer. These gentlemen submitted a report to the directorate, in which they reviewed the advantages and disadvantages of various methods of securing designs for the various buildings. They submitted four propositions: 1st, The selection of one man to whom the whole of the designing and supervision should be intrusted; 2nd, open competition; 3rd, selected competition; 4th, direct selection—say five men of reputation. The directors, on the recommendation of the consulting architects, adopted the last proposition. The *Inland Architect* says of the report: "As a professional document the report stands higher than any expression upon ethics or practice ever issued to the profession or the public in this country. It establishes a precedent that will more strongly influence the manner in which public as well as private work will be done, than any other measure, less than a Congressional or State enactment. It will aid in destroying the court house competition evil. It is a document that in effect will advance professional practice many years, and as such its authors deserve the thanks of all architectural practitioners, and the country as well, in the improvement in public and private works that will result from the example set of selecting the best talent rather than procuring designs by more or less disreputable competitions."

ANY person who has stood at the intersection of King and Yonge streets, Toronto, during the busy hours of the day, or in fact at any time between the hours of 9 a.m. and 6.30 p.m. cannot have failed to be impressed with its congested condition. At this point is converged the bulk of the street railway traffic of the city (every line but two, we believe), and the frequent passing and crossing of the cars alone is sufficient at times to seriously delay both pedestrians and vehicles as well as the passengers in the cars. An army of operatives, clerks and business people, re-inforced by shoppers and visitors, jostle each other and dive over the crossings, often at great risk of life and limb. This blockade keeps on increasing, and the limit will soon be reached, making necessary the adoption of some means of relief. It will not do to divert the street car traffic. It is of the utmost import-

ance that a car may be taken from such centre to any part of the city. Pedestrians will not make use of overhead bridges, preferring to dodge through on the level rather than climb stairs. The best solution that suggests itself to us is the widening of Yonge street at this point. The buildings on the northwest and northeast corners as far as the first lane on the east side are mostly old and comparatively inexpensive. By expropriating the sites on which they stand the street could be quite doubled in width for a distance northward of about 120 feet, making a sort of square which would not only greatly relieve the traffic, but would give dignity to the most important corner in the city. The improvements could never be accomplished cheaper than now, and we respectfully call the attention of the city fathers and the public to its necessity and utility.

A VERY interesting and profitable discussion might be carried on through our correspondence columns upon the relative merits of the two systems of preparation of architectural students referred to by Mr. Waterhouse in the presidential address noticed elsewhere in these columns, viz., that of first entering the office of a practitioner, studying at the same time as best may be the theoretical subjects set for his intermediate examinations; or that of passing the earlier years at a technical college and finally entering an office for the practical portion of his education. It is claimed in favor of the latter system that the student is enabled, when he enters an office after a thorough technical training and a well disciplined mind, to devote his attention almost wholly to the acquisition of practical knowledge and experience, and thus to really shorten the period necessary to become a competent member of the profession. If the profession is to draw well prepared students from our own institution, it will be necessary to enlarge its scope very materially. The work now being done is good, so far as it goes, but no architect of standing would care to be limited to recruits turned out from it under present circumstances. The Government will have to awake to the necessity of putting the architectural section on a par with similar institutions on this continent. To do this the very best men obtainable should and must be installed, and these cannot be got without adequate remuneration. No architect of experience who can make even in Canada an income of from three to six thousand dollars would be willing to give up business and accept the pittance which would be his lot were he to consent to occupy a chair in our institution.

THE question of patenting plans has given rise to considerable discussion and correspondence in the English architectural journals. A firm of architects have developed, or matured, what they claim to be an original arrangement of public offices, suitable for municipal or corporation purposes, and which they exhibit in its completeness in their competition designs for the new municipal buildings in Sheffield, (illustrated in *Building News*, July 25th, 1890). This particular idea they seek to patent intending to claim a royalty from any person who hereafter may adopt the same arrangement. This arrangement is, in brief, a general office, or series of them if for a large municipality, opening from a central hall. An official corridor surrounds three sides of the general office, from which only, it has access. The official corridor gives access to the various private rooms of the departmental officers, and they are thus removed from the intrusion and disturbance to which they would be subjected if their apartments opened from the public hall. Numerous correspondents protested against the proposal to patent this arrangement, citing instances of planning so nearly similar as to, in their opinion, nullify the claims of the would-be patentees. The Toronto court-house plans embody the idea, but on a very limited scale, the three court-rooms and the judges and prisoners' rooms being connected by a private corridor. The general consensus of opinion amongst the members of the profession seems to be strongly against the proposed action of this firm, claiming that were others to follow in their footsteps, all freedom in planning would be shut out, and that architects would be continually tormented by fears of trespassing on forbidden ground. At the same time it is most exasperating to an architect to see his pet ideas or designs, which have cost many hours of thought and toil, coolly cribbed by some speculative builder or enterprising architectural aspirant. We heard of a case of composite architecture, not many months ago, and not

fifty miles from Toronto. A young business man wanted to build a stable. He said, "I could not understand house architecture—that beat me, but I knew all about stables and horses, so I laid out the floor plans myself; got a young fellow in an architect's office, who lived handy, took him around to all the stables—that door, I got on ——— street, that gable on another, and those windows on another; then I had him around to the house every night, and we got up the prettiest stable in the city."

ARCHITECTURAL EDUCATION IN ENGLAND.

THE address of the President of the R. I. B. A. at the opening meeting of the fifty-seventh session, was a most interesting dissertation on subjects of vital importance to the profession, and coming from such an acknowledged master, should be received with marked attention by architects in all lands. The following remarks of Mr. Waterhouse are of interest in the light of the steps now being taken by the Ontario Association in the matter of students' examinations. He said, "Since the commencement of last session the new system of progressive examinations has come into operation. Two preliminary examinations for candidates, qualifying as "probationers," have been held in various centres, 169 students presenting themselves; of these, 62 have been declared exempt, and 77 have passed the examination, making a total of 139 who are qualified, in due time, to come up for the intermediate examination, which will be held for the first time this month. In addition 54 gentlemen have passed the qualifying examination in Architecture, entitling them to become candidates for Associateship. If a man is to take a creditable position as an architect in the future, he must begin by passing these examinations. It seems to me as essential, at the present day, to have passed them as it was in former years to have spent a certain period in an architect's office as a pupil. I do not say that both courses are not desirable, even necessary; but it will soon be found that the passing of these examinations is a *sine qua non*."

Mr. Waterhouse's reply to a suppositional question as to how the early days of one who intends to study architecture as a calling should be spent to the best advantage was as follows, and we cannot do it justice without quoting in full:

"He should have received in his schooldays some preliminary training of a scientific as well as of an artistic character. He should learn early to understand and appreciate the beauties of a fine building—of the civic and domestic edifices, the grand cathedrals and churches, the noble streets and open spaces, with which many a city in this country is endowed. He should be taken to museums of "comparative sculpture" such as the initiative of Violet-le-Duc created in the Trocadero, and, in default of similarly arranged educational institutions at home, to the sculpture galleries of the British and South Kensington Museums. In fine, he should, in his early, pliable days, be shown the works—or casts or drawings of the works—of the great architects of various countries, and thereby acquire an insight into the magnitude, the nobility of the career upon which he is about to enter. At the same time, his ordinary education should not be neglected. He must pass the matriculation examination of a university, or the local examination conducted under the authority of a university, or he must obtain some testimonials of proficiency granted by well-known educational bodies. Then, armed with such letters of introduction, he should come to the Royal Institute of British Architects, where he will be cordially received; and thereupon, after the necessary inquiries as to his certificates and after examination of his powers of draughtmanship, he will be admitted a probationer. His next proceeding is to be articulated, say for three years, to some practising architect on the conditions suggested in the form of articles which has recently been published, a most important item of which states that 'with the object of enabling the pupil to qualify himself for passing the examinations of students and Associateship of the Royal Institute of British Architects, he, the principal, shall and will allow the pupil such absence as he, the principal, shall deem reasonable for the purpose of attending lectures, classes of instruction, and the said examinations.' During the term of his articles the pupil, or rather the probationer to whom I am alluding, will have to prepare the "testimonies of study," which he has to submit to the Board of Examiners before he can be admitted to the intermediate examination; and to assist him in the preparation of these "testimonies" in London he will, if properly advised, become a member of the Architectural Association, attend its classes, periodical visits to buildings, etc., and thus mix with others engaged in a similar course of study. During all this period the Reference Library of the Institute is open to him, and he can borrow books not only from the Lending Library of the Association, but also from that of the Institute. At the end of his articles he passes the intermediate examination, is qualified as a student of the Royal Institute of British Architects, and his name and address are inserted in the register of members of the Institute, and published in our Kalendar. He afterwards competes for the prizes offered by the Association, and then for those offered by the Institute. He gains a

prize, perhaps a studentship, which enables him to travel in France or Italy, or even as far as Greece. He returns to England, enters an office as assistant, prepares his probationary work for the final examination to qualify for candidature as Associate; he passes the examination and is registered Associate. I confess that this record of the younger days of an architectural student seems to me a fairly complete one. No President of this Institute, forty or even twenty years ago, could have told a similar tale. Possibly, in a not distant future, we may find it better to use a course of instruction somewhat analogous, let us say, to that pursued by Professor Ware in New York, as a preparation for entering an architect's office, than that theoretical instruction of the sort just indicated should go on *pari passu* with pupilage. For a pupil to reap the full benefit of his time in an office, he should as soon as possible find himself set to practical work, and work of this sort in a busy age can hardly wait for one who spends a considerable portion of his time in abstract study; indeed, this term of pupilage might be greatly shortened were it to follow rather than be contemporaneous with theoretic training."

"CANADIAN ARCHITECT AND BUILDER" COMPETITION FOR A CITY HOUSE.

THE publisher of the CANADIAN ARCHITECT AND BUILDER invites competitive designs for a city house to cost not more than \$4,000.

The house is to be erected by a young architect having an income of about \$2,500 per annum and a family of three young children.

The house is to be placed on the south side of the street. The lot is 30 feet wide and the houses on either side are built up to within 2½ feet of the dividing line. They are at a uniform distance of 15 feet from the street line, and 55 feet deep including wing, and of the same class as the one in competition.

In judging the designs the disposition of the various rooms with regard to convenience and especially direct sunlight will be taken into consideration. Good planning will receive higher marks than good elevations, *i.e.*, a good plan having poor elevations, compared with a good elevation set up from a poor plan.

The city by-laws will not permit of wooden construction below level of first floor, while above that it must be either plastered or tiled.

The heating will be by hot air and position of registers should be indicated.

Each competitor will be required to give a concise description of his design, stating the materials he proposes should be used in its construction.

The first premium will be \$15; second \$5; third one year's subscription to CANADIAN ARCHITECT AND BUILDER. A premium of \$5 will also be given for the best perspective sent in.

Drawings must be made on sheets of heavy white paper or bristol board 14 x 20 inches in size, and must be drawn sufficiently coarse to allow of their being reduced to one-half the above size. Drawings must be made in *firm, strong lines*, with pen and *black ink*. No color or brush work will be allowed. Each drawing must be marked with the *nom de plume* of its author, and the author's name, *nom de plume* and full address, enclosed in sealed envelope, must accompany each drawing sent in.

Drawings must reach the office of the CANADIAN ARCHITECT AND BUILDER, 14 King street west, Toronto, not later than the 5th day of February next.

The right is reserved of publishing any design sent in. All designs will be returned to their authors within a reasonable time after the competition is decided.

The decision as to the respective merits of the designs submitted will be made by a committee appointed by the Architectural Guild of Toronto.

All architects practising in cities are debarred from this competition.

PUBLICATIONS.

The most beautiful frontispiece ever produced in an American magazine, appears in the January number of the *Cosmopolitan*. It is a reproduction in colors of Francois Flameng's famous picture "The Cake Seller," and can scarcely be distinguished from the imported photogravure which is exhibited in the dealers' windows, at the price of \$7 a copy. It is one of the most charming of subjects, and is well worth framing and preservation. The *Cosmopolitan* has become noted of late for its frontispieces and this very much excels its previous efforts.

PRESENTATION.

THE annual meeting of the Architectural Guild of Toronto was held in connection with the usual monthly dinner at Webb's on Thursday last. Mr. S. Frank Wickson was elected Secretary, and Messrs. Langton and Townsend, Executive Committee.

After the election of officers a very pleasing event occurred in the presentation to the retiring Secretary, Mr. S. G. Curry, of a beautiful repeating clock and an ivory rule, both suitably inscribed. The presentation was made by Mr. Storm, who referred in terms of warmest praise to the work of Mr. Curry in the organization of the Guild, and his indefatigable efforts in its interests for over three years since its inception. Mr. Curry replied, thanking the Guild in feeling terms, referring to the progress that had been made in architectural societies and organizations, and in the observance of professional ethics during the comparatively short period of the existence of the Guild.

Yours respectfully, VIGNOLE.

TORONTO ARCHITECTURAL SKETCH CLUB.

ON Tuesday, December 23rd, a paper on "Plastering," was read before the club by Mr. J. M. Gander, which led to an interesting discussion on limes and cements at the close, nearly all present taking part. A synopsis of the paper will be found on another page. Before Mr. Gander commenced, the members examined, with interest, a collection of architectural photographs belonging to Mr. S. G. Curry, which he had kindly brought to the Club for that purpose.

The attendance at this meeting was not quite so large as usual, but this was no doubt due to the nearness of the Christmas holidays.

At the meeting held on January 13th, Mr. Joseph Yorke gave a very instructive lecture entitled "Stone: its Qualities and Uses," which he illustrated by samples of the various building stones used in Toronto, and the tools for working them, thus bringing the subject very clearly before his audience. Mr. Yorke received an enthusiastic vote of thanks for his trouble. In introducing the lecturer the Chairman, Mr. A. H. Gregg, made some very pertinent remarks on the subject from the aesthetic point of view.

Mr. T. R. Johnson was elected a member of the Executive Committee to take the place of Mr. A. R. Mead, who is away from the city.

At the next meeting, on Tuesday, 27th inst., a paper on "Building Materials," will be given by Mr. H. B. Gordon, which promises to be very interesting. The competitive drawings for a window will also be on exhibition, and criticised by Mr. Frank Darling.

THE POINTED OR ENGLISH STYLE OF ARCHITECTURE.

By "H. B."

THE pointed style of architecture is a graceful subject of investigation. Its importance with the architect is so great and obvious that it would scarcely be necessary to advert to it if we did not perceive the neglect with which it is treated, or the mistaken view with which it is contemplated, through the medium of those incongruous fabrics which are too often raised in modern days and are nominally attributed by their builders to this style.

Notwithstanding the virulence and declamation of those who were engaged in reviving Grecian architecture, the pointed mode remains the great boast of English art. Its origin may be disputed; the powerful rivalry of a neighboring country may not be denied; but no cavils of fastidious writers have succeeded in showing the prototype of our great national instances of excellence in this style. This mode of architecture was undoubtedly the pride of our ancestry—the favorite child of art on which they lavished indulgence—and the structures erected in this style are equally the pride of the existing period; since in the assemblage of their several perfections they present the single surprising instance in which the middle ages were enabled to produce an excellence in the ornamental arts, independent of all imitation, of the sublime simplicity of Greece and Rome.

The term Gothic was first bestowed on some species of ecclesiastical architecture, as an epithet of obloquy, and was intended to signify its supposed barbarous deviation from the Grecian or Roman modes—not to imply its deviation from the Goths, who, in fact, possessed no national mode of architecture, and when in Italy, profited by Italian artists. It is much wished that the word Gothic should not be used in speaking of the architecture of England, from the thirteenth to the sixteenth century. The term tends to give false ideas on the subject, and originated with the Italian writers of the fourteenth and fifteenth centuries, who applied the expression of "La Maniera Gotica" in contempt to all the works of art of the middle ages.

From these writers it was borrowed by Sir Christopher Wren, the first English writer who has applied it to English architecture. There is very little doubt that the light and elegant style of building, whose characteristic feature is the high pointed arch struck from the centres, was invented in this country; it is certain that it was here brought to its highest state of perfection, and the testimonies of other countries, whose national traditions ascribe their most beautiful churches to English artists, adds great weight to this assertion, and peculiar propriety to the term English, now proposed to be substituted for the word Gothic.

"The architecture used by the Saxons is very properly called Saxon. The improvements introduced after the Norman conquest, justify the application of Norman to the edifices of that period. The nation assumed a new character about the time of Henry the II. The language, properly English, was then formed, and an architecture founded on the Norman and Saxon, but extremely different from both, was invented by English artists; it is surely equally just and proper to distinguish this style by the honorable appellation of 'English.'

In this they essentially differ from the Roman's way, who laid all their mouldings horizontally, which made the best perspective; the Gothic way on the contrary carried all their mouldings on the perpendicular; so that the ground work being settled, they had nothing else to do but to spire all up as they could. Thus they made their pillars into a bundle of toruses, which divided into more when they came to the roof; and then these tor-

uses split into many small ones, and, traversing one another, gave occasion to the tracery work.

Sir Christopher Wren indicates that the practice of the pointed style of architecture, exclusively appertained to the fraternity of Free Masons, who were stimulated to exertion by the indulgences granted by the Pope, and styled themselves Free and Accepted Masons, and ranged from one nation to another as they found churches to build (for very many in those ages were in building, through piety or emulation). Every tenth man was called a warden and overlooked each nine. Sir James Hall, Bart., the ingenious antiquary, referring to those principles whence all the works of true genius take their data, observes that the combination of art with that of nature, of which we see the most perfect example in the Corinthian capital, produces what are called architectonic forms in which the variety of nature being subjected to the regularity of art, the work acquires that peculiar character, which in a natural object, or in its entire representation we consider offensive under the name of formality, but which, in architecture, we admire as a beauty, under the name of symmetry. Occupied with this point of the probable origin of the pointed style, in whatever district of the globe the invention might have occurred, he was accidentally induced to attribute it to an imitation of small simple buildings, composed of willow rods. He worked experimentally on his new idea and found that, from an artificial combination of such rods, united with the effect produced upon them by time and the course of nature, even the most intricate forms of this elaborate style might be reduced, in the view of a theorist, to the simplicity of their original state.

A casual thought, incidentally conceived, and expressed without a view to its consequences, but which tends towards the same speculation, occurs in the following words of Grose: "A number of boughs, stuck into the ground opposite to each other, and tied together at the top in order to form a bower, exactly describe the pointed arch." Searching in history for support of his theory, Sir James Hall notices several early religious buildings, which are expressly said to have been made of rods. Such was the first little church of Durham, and the celebrated old church of Gastonberg. Sir James Hall has sufficiently profited by his historical aid, in stating it as being likely that a pious posterity would endeavor to preserve the peculiar form of such churches, by representing them in stone; and this attempt when carried into execution, being found to produce a beautiful effect, it is not unreasonable to suppose that the idea should become a favorite one, being followed out by successful refinements, might give birth to a new style of architecture.

Mr. Hawkins contends that in every Gothic cathedral as yet known, the extent from north to south of the two transepts, including the width of the choir if divided into ten, as Vitruvius directs, would exactly give the distribution of the whole. Three arches form the north, and three the south transept; the other four give the breadth from one transept to the other, one division of the four being taken for each of the side aisles of the nave, and two left for its centre walk, the complete distribution of the nave is also given.

Whilst noticing the relative proportions of buildings in this style of architecture, it may be desirable to cite the following remark of Brown Willis, although unconnected with any presumed similitude of arrangement between the works of Grecian and ancient English architects: "In most of the stately abbeys, the height was equal to the breadth of the body and side-aisles. The steeple and towers were equal in height to the length of the whole fabric; or rather the cross aisle from north to south, as is the case in Bristol, Chester and St. Davids. The cross aisles often extended half the length of the whole fabric, as did the nave or western part, viz., from the great door at the west end to the lower great pillars that supported the steeple. And the side-aisles were just half the breadth and height of the nave, inasmuch that both added together exactly answered it.

Mr. Warton divides the pointed style into three classes, which he thus denominates:—The Absolute Gothic, which began with ramified windows of an enlarged dimension, divided into several lights, and branches out at the top into a multiplicity of whimsical shapes and compartments, after the year 1300. Of this fashion he considers the body of Winchester Cathedral to afford a just idea; the Ornamental Gothic, of which he names for example the choir of St. Mary's Church at Warwick; the roof of the Divinity School at Oxford; and the Chapel of King's College, Cambridge; the Florid Gothic, of which the Chapel of St. George, at Windsor, and the Chapel of Henry the VII, at Westminster, are conspicuous specimens.

Mr. Britton, in the judicious "Sketch of a Nomenclature of Ancient Architecture," thus designates them to their respective dates, viz.: English, from 1189 to 1272, embracing the reigns of Richard I, John, and Henry III; Decorated English, from 1272 to 1461, including the reigns of Edward the I, II, and III, Richard the II, and Henry the IV, V, and VI; Highly Decorated or Florid English, from 1461 to 1509, including the reigns of Edward the IV and V, Richard the III, and Henry the VII. "From this era," observes Mr. Britton, "we lose sight of all style and congruity"; and public buildings erected during the reigns of Henry the VIII, Elizabeth and James the I, may be characterized by the term of Debased English or Anglo-Italian.

Dr. Milner describes them thus.—The First Order, that of the acute arch, he considers to have been perfected before the end of the twelfth century, and to have continued till near the close of the thirteenth century. Example, interior of the east end of Canterbury Cathedral. The Second Order, he terms that of the perfect or equivalent arch, but adds for an example, the interior of York Minster. He states this order as prevailing from the disuse of the former till after the middle of the fifteenth century;

the Third Order, or that of the obtuse arch, obtained from the date at which the preceding was rejected, down to the sixteenth century, when the style itself was exploded; example, Chapel of Henry the VII.

Convinced that the terms applied by Mr. Britton are sufficiently appropriate and expressive, I have on the present occasion adopted his nomenclature. The arches used in this first class of English architecture were of narrow proportions, and sharply pointed. In large structures, where a second tier is introduced opening to the triforium, two or more arches are united under one, with trefoil or cinquefoil heads; and arches with the same kind of finishing sometimes occur in other parts of the building. The columns are slender, and are surrounded with detached shafts of marble united at the base; and each, according to Mr. Bentham, having a capital richly adorned with foliage, which together in a cluster form one elegant capital for the whole pillar. It may be added that the capitals thus uniting under one head were not invariably adorned with rich foliage, but were sometimes conspicuous for simplicity of decoration. The windows are of a narrow oblong form, and pointed like a lancet. They are sometimes seen in one opening, forming a single light, in which mode they often occur in the chancels of small parochial churches, and may be presumed to indicate the earliest stage of this architectural class. But in edifices on which great labor has been bestowed, we find two, or as frequently three united together; the central being higher than those placed laterally, is the prevailing window in many of the noblest structures of the Third Henry's reign, where two or more of the arches are placed together under one larger arch. The vacant space between the heads is filled with a trefoil, quatrefoil, or cinquefoil.

Ecclesiastical structures displaying the Early English style of architecture, reign of Richard the I, from 1189 to 1199:—North side of the west transept of Rochester Cathedral, Kent; the Chapel of the Holy Trinity at Canterbury, Kent, which has windows in the lancet shape, appears to have been completed about the commencement of this reign; upper transept of Lincoln Cathedral and Choir, Lincolnshire. part of the nave and aisles of Peterborough Cathedral, Northamptonshire. Reign of John, from 1199 to 1216: Vestibule at the entrance, termed "The Galilee," of Ely Cathedral, Cambridgeshire; parts of the east end of Winchester Cathedral, Hampshire; remains of Beaulieu Abbey, Hampshire; choir and upper transept of Rochester Cathedral, Kent; parts of the nave and central tower of Lincoln Cathedral. Reign of Henry the III, from 1216 to 1272:—Presbytery of Ely Cathedral used as the choir, erected between the years 1235 and 1252, Cambridgeshire; Westminster Abbey Church, begun in 1245, completed as to the works of this reign, 1269; the tower and west front of Wells Cathedral, Somersetshire; Salisbury Cathedral, Wiltshire; this edifice is inestimable as an architectural specimen; the two upper divisions of the tower and the lofty spire have been added since; this Cathedral was begun in 1220, and finished, with the above exceptions, in 1258; the transept of Worcester Cathedral, Worcestershire; the south transept of York, Yorkshire, erected about 1228, and the north about 1260. It is believed that painted or stained glass for the use of church windows in England was introduced, or at least so frequently adopted as to constitute an era, about the time of Henry the III.

(To be Continued.)

ARCHITECTURE IN NEW YORK.

A BRIGHT young student of architecture who recently left Toronto to pursue his professional studies in New York City, has lately written to a member of the firm in whose office he was here his first impressions of the architecture of that city. We have been privileged to make extracts from this letter, which are here presented to our readers in the belief that they will be found interesting and perhaps instructive:

"I enjoyed myself strolling around several days after I got here, looking at the architecture. Several new buildings they have put up and are finishing here are very beautiful, though the material seems somewhat strange; no doubt because it is new to me. They are built of buff colored brick (a good many similar to the Roman brick) and buff terra cotta of a very ornate character, and mostly with an Italian Renaissance feeling about them. The Hotel Imperial is one of the most notable ones of which I speak.

The buildings which I had been familiar with, by seeing them in the journals, look hardly so well in execution; but the detail as a rule seems fairly good all round—I think much better than at Chicago. In some of the buff buildings which I have mentioned (not in the Imperial) they seem to be making the detail remarkably fine—so small, in fact, especially in one large building, that it is almost fine enough for inside wood finish in a dwelling house.

Taking things altogether, I am more convinced than ever that what Canadian architects lack is not ability, but rather the opportunities which seem to so surround their American brethren. I have several times analyzed some of the buildings here which are of a very attractive character at first sight, and which do not seem to decrease in value on examination, and I think there is not any better proportion or profile of moldings than what I have been quite used to in Toronto; but I think it is the addition to this of a free use of stone and carving and other enrichments which gives it a wealthy appearance compared with our buildings, which show a forced economy of architectural ornament. One of the most used molding enrichments employed here, I think, is the egg and dart, in almost endless variety; and I never before realized what an effective one it is, though I should judge it is somewhat a costly one to cut in stone, but in terra cotta there is not that objection.

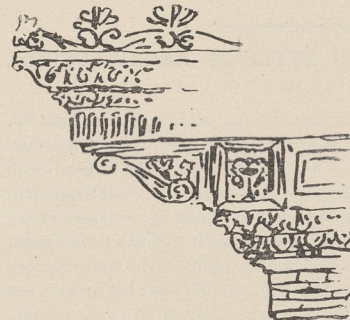
I was very much disappointed in Fifth Avenue at first, as from what I had heard of it I had formed the highest expectations regarding it; though at the same time it is a very fine street, and I will be able to give it somewhat of its true value when my first impressions of it wear off. The street which has impressed me most, so far, in any place, was one which I saw in Cleveland, Ohio, two years ago (not Euclid Avenue) but perhaps in that case it was because I came on it unexpectedly. There the houses have the advantage of being back from the street a hundred feet or more, which greatly adds to their appearance.

A very peculiar thing to me, here, is the rock quarrying going on in several places in the city to lay the foundations of intended buildings. As a rule, they have a couple of boilers supplying steam to three or four rock drills, and strangest of all, the strata of the stone is almost perpendicular to the horizon, and the material appears to be nearly or altogether of granite. I saw the party wall of one ten-storey apartment house built of this stuff, and adjacent to it they were building a foundation of the same material, and it was the most awful piece of rubble work I have ever seen or even heard of. The minimum thickness of the wall would be, I should say, nearly 3 ft., and in some places the great stones they were piling up across the wall could not be less than 4 ft. 6 in. long, and I think the one they were bedding on the wall (with a derrick) as I came along could not be many inches short of



5 ft. They were building it in cement mortar, and were very carefully filling in the cavities with small stone, but I supposed that this latter was because a man who appeared to be the owner or architect was watching them pretty closely. I think the wall was hardly as regular as this sketch. You can imagine my surprise at seeing this class of work here, especially as it was on Eighth Avenue, right against Central Park.

I have been helping the young man who is doing the drawings of a mission building they are putting up on 42nd street in this city. It is 6 stories in height and the floors fire-proof, with a gymnasium on the 5th floor. Mrs. W. K. Vanderbilt is paying for the work, and it is



expected to cost about \$250,000.

When the firm found out I could do a little with iron beams and columns, they left the iron work almost entirely in my hands, and I have made 3 or 4 sections of it (to ¼ scale) as there is a little court to it, with beams of different levels on the same floor and bent ones for the gallery of one large room, and it makes it quite complicated in some parts for arranging for the fire-proofing.

It might be interesting to you to know that the terra cotta (buff) cornice alone, as per sketch, some 75 ft. on front elevation with returns of about 25 and 10 ft. on the sides, will cost \$4,000.

HAMILTON'S NEW BUILDING ORDINANCE.

THE provisions of the new building ordinance lately passed by the City Council of Hamilton, referred to in the CANADIAN ARCHITECT AND BUILDER for December, are as follows:

1. The following section is hereby substituted for Section 5 of said By-law: (5) No person shall deposit in any public street, lane or alley in the city any material to be used in the erection of any new building, or the repair or alteration of any old building at a cost of over \$100 until a plan or description in accordance with the requirements of section 7 of chapter 41 of the Consolidated By-laws has been lodged with the inspector of buildings, and such person has obtained from the inspector a permit in writing for the deposit of such material, the inspector of buildings shall give a permit in the form appended to this By-law.

(5 a) No person shall, either personally or through anyone acting for him or with his authority, deposit or place any building material in or upon any public street, lane or alley within the limits of the city, except for the purpose of building or repairing, and in every case such building material shall be so placed as not to obstruct the surface drainage of such public street, lane or alley, or the free use of any public hydrants, or to occupy more than is necessary of such public street, lane or alley, and in no case more than one-third the width thereof in that portion of the city bounded by Catharine, Hunter, Bay and Cannon streets, and in that part of King street between Catharine and Wellington streets, or more than one-half thereof in any other part of the city, the space so occupied not to extend along such street, lane or alley further than the frontage or depth of the lot so being built upon, except that it may extend in front of the lot on either side, so long as the occupant of such adjoining lot may consent thereto; provided always that if the owner or tenant of the real estate on the opposite side of the street, lane or alley shall require at the same time to use any portion of the street, lane or alley for the deposit of building material, then, in such case, each party shall be restricted to the use of one-fourth of such street, lane or alley instead of one-third as aforesaid in that portion of the city bounded by Catharine, Hunter, Bay and Cannon streets, and in that part of King street between Catharine and Wellington streets, and to the use of one-third of street instead of one-half thereof in any other part of the city, but every lane or alley must be kept open for traffic to a width of not less than eight feet, and such material shall not in any case be allowed to remain in any public street, lane or alley for any longer time than may be reasonably necessary for the completion of the work for which such building material is being used. Nothing in this By-law contained shall be construed to interfere with the rights and privileges granted to the Hamilton Street Railway Company or H. & D. Street Railway Company under and by virtue of the By-laws relating to such companies.

(5 b) Every person who shall deposit or place any building material upon any public street for any of the purposes hereinbefore mentioned in that part

of the city bounded by Catharine, Hunter, Bay and Cannon streets, or in that part of King street between Catharine and Wellington streets, shall, while any part of the material remains upon such street, enclose and keep enclosed the ground thereby occupied with a close board fence of a uniform height of not less than six feet, the public sidewalk to be left clear in all cases where it is not necessary to occupy it, and to be roofed over, wherever necessary, at a height of not less than eight feet above the level of the sidewalk with two thicknesses of one inch boards, and where it is necessary to occupy the sidewalk with building material, a plank sidewalk three feet wide shall be made by the person depositing the building material, such sidewalk to be made immediately outside of the said fence, and the ground covered thereby to be reckoned as part of the space which the person depositing the building material is allowed to occupy.

(5 c) Every person who shall deposit or place any building material upon any public street for any of the purposes hereinbefore mentioned in any part of the city other than that portion thereof bounded by Catharine, Hunter, Bay and Cannon streets, or that part of King street, between Catharine and Wellington streets, shall, while any part of the material remains upon such street, enclose and keep enclosed the ground occupied thereby with a board fence of sufficient height and strength to fully protect the public from injury or danger therefrom, and if the public sidewalk shall be enclosed within such fence, he shall make a sidewalk three feet wide immediately outside of said fence, and the ground covered by such sidewalk shall be reckoned as part of the space which the person depositing the building material is allowed to occupy.

(5 d) The fence, roof and sidewalk mentioned in the preceding paragraphs of this section shall be removed by the person by or for whom they were erected as soon as the building material enclosed thereby has been used or removed, and he shall also thereupon put the street and sidewalk where such material has been deposited in as good repair as it was before such material was placed thereon.

2. The following section is hereby substituted for section 6 of said by-law:

(6) Whenever any person or persons, whether contractors or proprietors, shall be engaged in the erection or repairing of any building or other structure whatever within this city, and shall cause or permit any building material to be placed on any public street, lane or alley in the said city, and whenever any person or persons who shall be engaged in constructing any sewer or laying any gas, water or other pipes or conductors, in or through any of the streets, lanes, alleys, highways, sidewalks or other public places in said city where persons pass and repass, whether by appointment of the city, or its agents, or as contractors, or otherwise, it shall be the duty of all such persons to protect the public from injury therefrom by placing a sufficient number of red lights upon such materials, rubbish, goods, wares and merchandise, heaps, piles, excavations or any other thing so caused or permitted by them to be or remain in or at any of the places above mentioned, and in such manner as to enable the same to be distinctly seen by all passers-by, and to continue such lights from dusk till daylight, during every night in which any such obstructions are allowed to remain in or at such place, and if such materials or obstructions are enclosed by a fence such lights shall be put on or above the fence.

(6 a) No person shall allow building material of any kind under his control to remain in any public street, lane or alley after dark without being closely piled, and being also sufficiently lighted in the manner hereinbefore required, or to remain more than twenty-four hours in any public street, lane or alley without being properly enclosed by a fence in the manner hereinbefore required, or to remain in any public street, lane or alley, in any other manner or for any other purpose, or for any longer time than is permitted by this by-law, nor shall any person put any fence or obstruction or allow any fence or obstruction under his control to remain in any public street, lane or alley, in any other manner or for any other purpose, or for any longer time than is permitted by the provisions of this by-law.

(6 b) No owner or occupant of any building shall place or construct, or authorize the placing or construction of any eavetrough, conductor, water pipe or gutter pipe so as to permit or cause the water from the roof of such building to escape upon, flow over or run across or upon any public sidewalk, provided there is an adjacent sewer, and the owners of all buildings hereafter erected or rebuilt shall connect all conductors or gutter pipes upon that part of the building abutting upon any street with the sewers upon such street as the case may be, and whenever the pavement upon any street, not being a wooden sidewalk, is being constructed or reconstructed, the owners of all buildings abutting upon the street shall connect with the sewer upon such street every conductor, water pipe or gutter pipe, the water from which would otherwise flow over or upon such pavement.

(6 c) It shall be the duty of the inspector of buildings to keep a record of all permits granted under this By-law, and to enforce the provisions hereinbefore contained, except the last provision contained in section 6 b, and to prosecute all persons who, after due notice from him, shall fail to comply with the requirements thereof, and as to the last provision of section 6 b, such duty shall be performed by the street commissioner.

3. Any person or persons guilty of a breach of any of the provisions of this By-law, shall for every such breach be subject to the penalties imposed by chapter seventy-one of the Consolidated By-laws of this City.

4. This By-law shall take effect on and from the passing thereof, but nothing herein contained shall limit or restrict the rights as to space of those who may have erected fences enclosing building material under the By-law hitherto in force; but with regard to all such fences heretofore erected and now standing, the By-law hitherto in force shall continue to have effect as to the space thereby permitted to be enclosed by such fences for the deposit of building material.

NOTES ON PLASTERING.*

By J. M. GANDER.

SPECIFICATIONS usually call for laths that are dry, free from knots, sap, and bark. There is only one point here that needs discussing—that is, that laths may be too dry, and for this reason, that when the mortar is put on it will swell them up to such an extent that the key is almost squeezed off. When the lath afterwards shrinks the mortar is quite loose. A good and sufficient key is obtained by spacing the laths $\frac{3}{8}$ of an inch apart, but for two coat work I would recommend rather less space, provided the mortar is well rubbed through, for the wider the key the sooner will the ceilings get dirty and stained at the key. This staining is caused by there being a greater quantity of mortar between the laths than on them—consequently it will shrink and leave small channels that will catch and hold what dirt is floating in the air. This is generally obviated by having three coat work, the first or scratch coat forming a foundation and causing the drying to be more even.

When three coat work is specified it is also necessary to state that the first

coat whether for wall or ceilings shall be quite dry before the second coat or floating is put on, otherwise in the lath work the key will be broken. I know some people will say it is better to put on the second coat before the scratch coat is too dry. The only reason I know of for that argument is that it will take less material and labor, consequently it can be done cheaper. For the first coat on walls it should be put on pretty soft and well rubbed in with the points of the trowel.

When the brick walls are rendered, they should always be done before the strapping is put on, otherwise the battens will shrink, and perhaps just behind them might be seen daylight through the joints in the wall, and as a chain is only as strong as the weakest link that is in it, so it is with the wall—you may cover all over except just the spot that most required to be done.

In selecting lime for mortar it is best to choose that which is generally described as "poor lime." The word "poor" in this case does not mean that it is so in quality, but rather the reverse—the poor limes will not take as much sand as the rich or fat limes, but the work is very much stronger and better and will set hard in some situations, as for instance a damp wall in a basement, where a rich lime would not set, but in using it it is better to run the mortar a few days before it is required to prevent what is known as blistering or blowing. Here in Toronto I prefer the Georgetown lime, although there are several kinds, and generally of a very good quality. For finishing the Guelph white lime is the best, being of a good color and will trowel to a good face.

It is, of course, necessary to have good sand that would be described as clean, sharp, and coarse, but all sand that would come up to that description would not necessarily make good mortar; for instance, if you take the lake sand and use it alone (that is not mixing other sand with it), it will get hard on the face, but if you break the surface the inside will invariably fall to powder. There may occasionally be an exception, but it is very rare.

Sometimes the sand may be too coarse, then you will not have firm solid mortar, as the spaces between the particles of sand are so large, and being filled with lime, there is no strength in it. In that case it will be necessary to use some finer sand with it to fill up the interstices, so as to make a compact, solid body.

You cannot lay down any hard and fast line as to the amount of sand a given quantity of lime will take; the proportion must always be determined locally; it will vary from three to six parts of sand to one of lime in London Eng., with Dorking lime about three at Sutton Bridge, in Lincolnshire; with Peterborough lime, I have used as much as eight; in Brighton about four, and in Toronto, with what is known as "Bloor St. West sand" about five parts of sand to one of lime. So with hair, it is possible to put too much in. When it is of good quality and long, and too much is used, it will make the mortar so tough that you cannot get it to key through the laths.

As far as possible it is well to do without gauged work. Of course at times it becomes a necessity, but it is seldom satisfactory and never certain in result.

Lately we have had introduced here a new article for plastering, Adamant, and if it fulfils all that is claimed for it, it will certainly fill a long felt want. It is a most useful article for winter use, as you are able to coat and finish complete any reasonable amount in the same day. This is a great advantage in occupied houses.

Soapstone is, comparatively speaking, a new kind of finish, and I think for finishing bath rooms and servants' offices it is the best thing we have. When it is properly done you can take a sponge and water and wash it clean, which is very necessary sometimes after plumbers and hot water men have finished their work.

The ordinary kind of finish here is described as hard finish, that is, putty made from Guelph white lime and to which is added some plaster just as it is going to be used. The addition of plaster and plenty of trowelling constitutes the hardness. Another kind is described as sand finish, that is, a little sharp, clean fine sand, added to the putty, either with or without the plaster. When the buildings are going to be papered or decorated immediately after being built, sand finish is the best, as the paper is less likely to peel off. If a thoroughly good and fine surface is required for decorating, that which is known by the name of "trowelled stucco" is the best finish, but on account of the extra labor required it adds considerably to the cost. This is composed of two parts of sand to three of lime. The second coat of mortar for this finish is left rougher on the surface than for hard finish. The stucco is put on the wall and traversed in with a rule reaching from top to bottom of the wall—that is, when the wall would not exceed 14 ft. in height. When it has been got thoroughly straight and true it is hand floated well with water until all the fat or superfluous lime has come to the surface. The process of hand floating is to take out all irregularities or waves. It is then trowelled down, and if properly done, you have as far as is possible, a perfect wall.

Of course when expense is not an object and time is, we have the various cements, such as Keene's, Martin's, and Parian, all of which can also be used for running mouldings such as architraves, base dados, etc. These can all be painted immediately the plasterer has finished. The base of all these cements, as also plaster, is gypsum. The different results are obtained by mixing various chemicals to retard the setting and giving time to work it and bring it to a true, hard face, which is capable of being polished equal to marble.

When these cements are used as a finish, ordinary lime mortar alone should never be used. The lath work should be covered with two parts hair mortar, with one part Portland cement added for scratch coating. The brick walls and second coat of lath work should be floated with a mixture of three or four parts of sand to one of Portland cement, the surface

* Paper read before the Toronto Architectural Sketch Club, Dec. 23rd, 1890.

left rough but true so as to form a good key for the finish; or the back ground may be done with the same cement as you are going to finish with, only with sand added. When this is the case, ordinary lath nails should not be used, unless they are galvanized or the heads given a coat of shellac. When the lathing is done, zinc or copper nails are still better. If this precaution is not taken the heads of the nails will rust through to the surface no matter what you may do. The finish known by the name of "stucco finish" left from the float may be done with any lime, or cement with sand.

In selecting sand to use with Portland cement you cannot very well get it too coarse, as neat cement is far stronger than when mixed with sand, it being exactly the reverse of lime; but even with this it is well to use, comparatively speaking, some fine sand to make the body compact, without what might very well be called a waste of cement.

In England, for building sea walls, harbors, breakwaters, etc., the material generally used is very coarse gravel, to six parts of which is added one of washed sand and one of Portland cement. The whole of this is thoroughly mixed with water and cast into blocks of various sizes about 1x8 inches square by 3 ft. long. They are allowed to get quite hard and are then built into position.

When water tanks or swimming baths are built of concrete or brick and are then lined with Portland cement, it is well to use a small quantity of washing soda with it which causes the cement to set more quickly and also helps to increase the hardness; but for outside work, such as moulding or ornament, soda has an objectionable feature—an efflorescence on the surface which makes it unsightly for a time.

Brick work should always be well wetted before plastering is done, as it gives a better bond to the work, and in the case of cement, if the wall absorbs the moisture too quickly, it will never get thoroughly hard, or, in plasterers' language, "the nature has all died out" before it has had a chance to set.

During the months of July and August you can never make so satisfactory a job of plastering as you can in the spring or fall of the year when the drying is less rapid. Portland cement should never be painted for at least one year. Lime mortar should never be mixed with Portland cement when the work is described as being done in Portland, but Portland cement may be added to lime mortar with great advantage.

Roman cement is not as much used now as formerly, Portland having almost superseded all other cements of that kind. It was used in England some years ago very extensively and was most useful for casting sections of large brick sewers—the brick, generally about 12 to 16 in number, being put into a trough that was shaped to the right curve of sewers, and spaces about $\frac{1}{2}$ inch being left between them; they were then well grouted in with the cement, and in about half an hour they could be turned out of the mould and were ready for use.

Mastic is a cement of a different nature to any used for plastering, being composed of sand and litharge, and when about to be used mix with oil instead of water. There is a very good sample of this work done at the corner of Carlton and Church streets in this city.

When repairing is done old laths should never be allowed to remain on, particularly in the case of ceilings, as in a new lath there is quite a lot of ragged fibre; caused by the saw in cutting, which helps to bond the plastering; in an old lath that is all filled up.



NON-CONDUCTING COVERINGS FOR HOT WATER PIPES AND RESERVOIRS.

In a series of articles being published in the *London Builder* on hot water supply, the following is furnished regarding coverings for pipes and reservoirs for saving heat:

It is no exaggeration to say that very shortly no apparatus for hot water supply will be considered complete or finished if the whole system is not insulated, so to speak, so that almost every particle of heat absorbed by the water in the boiler will be obtainable from the taps, instead of nearly fifty per cent of it being radiated from exposed surfaces, and worse than wasted.

There are at this moment hundreds, if not thousands, of hot water systems that, by being carefully covered, would be converted from miserably inefficient to highly satisfactory appliances—this in particular with the tank system, when the tank is so commonly fixed in a cold, draughty roof.

An interesting instance of the success attending the covering of pipes occurred quite recently, in which a residence was fitted with a complete system of hot water supply pipes on a scale sufficiently large for a good boiler in a five-foot kitchen range, but owing to a delay experienced in obtaining the range in question, another of a smaller kind, three feet, was fitted up and connected to the chimney and circulating pipes for temporary cooking and hot water supply. It was not supposed that this little range, with its boiler, would do much in the way of water heating, but to the astonishment of everyone it gave a really abundant supply of very hot water in every part of the house as quickly in the

morning and altogether as satisfactorily as a larger range would be expected to do.

This desirable result was wholly brought about by the pipes and cylinder being everywhere carefully covered with a sufficient thickness of felt. It really does seem opposed to all reasonable and workmanlike principles to allow such abundant opportunity for heat to be thrown away, while labor and fuel is being expended in the kitchen apparently for this object. The waste of heat is not always the only ill result experienced, as in many instances the warmed air is very objectionable, and if a hot water pipe is carried alongside a soil pipe it is possible for a very unpleasant feature to introduce itself. It is a very customary practice for a hot water fitter to carry his pipes up in the casing that is nearly always to be found passing from the bottom to the top of the house, this casing containing all the different pipes of the house, such as the cold service from the main, the cold service down from cistern, the water closet cold water services, and, very commonly, the soil pipe. There is no objection to his making use of the casing if it is large enough to hold a few more pipes, and it is often used of necessity, as to carry pipes openly through well decorated rooms is out of the question; but to carry hot water pipes up this case without felting them is an exceedingly bad practice, as they are not only brought into contact with very cold surfaces (they have frequently been found wired on to cold pipes, four or five pipes in a bundle), but the heat radiated causes a draught or current of air to set in, as we find in a chimney.

When a casing contains pipes that radiate heat, that casing, within a few moments after heat is felt within it, is converted into a flue, as by applying heat to air it can be made to circulate to all intents and purposes like water. Air that is brought in contact with heated surfaces becomes heated and rarefied, and, thus being made lighter than the surrounding air, rises, and cold particles immediately flow in to take its place, they becoming heated and following the first particles, and so on, so that it resolves itself into a stream of warm air flowing out of the upper part of the casing, and cold air flowing in in corresponding volume below. This may be excellent in practice when hot water pipes are used for effecting ventilation; but it is fatal to hot water services, which are particularly required to keep the heat within them; in many instances they are cooled at about the same speed as they would be if placed outdoors when a strong wind was blowing.

It may be argued that if the casing is stopped off at its two extremities the trouble will be obviated; and so it would be if the casing was perfectly air-tight everywhere, and had no cold pipes within it. But this is never the case; there are always numbers of crevices and apertures which permit of a tolerably free ingress and egress of air.

The best material for covering these pipes, and also the reservoirs, is hair felt; hair is a natural poor conductor of heat, and nothing surpasses it for this purpose, especially as it is so easy of application. This felt, which is readily obtainable in sheets, is usually cut up in strips for pipe work; the strips are wound upon the pipe spirally, being secured here and there with cord or wire, but where spiral winding is impossible it can be tied on in lengths, which answers equally as well, but has not such a good appearance.

The best and most complete arrangement for pipe work, but which entails a little greater expense, is to have the felt wound on spirally in one direction, say from left to right, and well secured with cord; then cover this with good canvass, also wound on, but in the opposite direction, and this secured with wire.

It is most necessary, to secure the best results, to have the felt thick enough; hair-felt is sold in great quantities about 3-16-inch thick, but this is not thick enough for good work. If possible, have it $\frac{1}{2}$ -inch thick, and a marked benefit will be had by using even thicker than this, or, say, two thicknesses of $\frac{3}{8}$ -inch.

In felting cylinders, it is the best plan to take sufficient sheets of felt, and then sew the edges together to form one sheet large enough to go all round the reservoir. This sheet can then best be secured by bands of hoop iron or brass passed round the top and bottom, and around the middle; these bands being tightened up by having a bolt to draw the two ends together. After

this circular piece can be cut for top and bottom, these pieces being sewed on to the top and bottom edges of the large sheet. Tanks can be covered in exactly the same way.

Sometimes it is desired to encase the tank or cylinder with woodwork. This makes by far the neatest job, though more expensive, and it causes a little trouble should it be necessary to open the reservoir under some circumstances. If it is decided to have a casing it is very important that the space between the woodwork and the reservoir be well filled in with some poor conductor of heat, such as cow hair (plasterers' hair), slag wool, or even dry sawdust answers very well when the casing can be filled from the top. If the casing is not "packed," with something it would be much better to be without it, as it would have a current of cold air passing up through it the same as explained with the general pipe casing just referred to.

If the hot water service pipes are carried up through the house without entering the general pipe casing mentioned, and it is proposed to incase them for the sake of appearance, this casing must also be packed for the reasons explained, but this is frequently neglected with the worst results, as the casing of pipes is frequently done for appearance sake only, the question of radiation not being considered.

Occasionally it is found practically impossible to carry the pipes up inside the house, in which case it becomes necessary to carry them outside. This is very objectionable, but where it cannot possibly be avoided the objections do not avail, but they must be guarded against. In the first place, the pipes must be incased, and the casing ought to be of fair size, so that 1½-inch of packing can be filled in between the woodwork and any of the pipes. The packing must fill the case tightly, and it is imperative that the casing be well and tightly secured to the wall, as should it get loose, the woodwork and the packing will come away from the pipes and leave them exposed.

When pipes are carried outside the packing is not only needed to prevent great waste of heat, but there is a danger to be guarded against in cold weather when the pipes are liable to be frozen and an explosion possibly ensue, as the only outlet for any steam that may be generated in the boiler is at the upper extremity of the expansion pipe, unless a safety valve is provided.



ART EDUCATION IN CANADA.*

BY W. THOMSON.

In these latter days of the nineteenth century, when so much attention is being given the subjects of Protection, Free Trade, Reciprocity, or something to stimulate and advance commerce, it occurs to me that quite a reformation might be made in the art world. Art education elevates the people, aids commerce and brings wealth to the nation.

In Canada protection is needed from bogus art dealers, bogus art schools and bogus teachers. What are we going to do about this art education which just now is agitating our little circle? Are we going to leave it solely in the hands of the Government, to be controlled by the ministers who know not the first thing about art, and are therefore incapable of successfully conducting such instruction, or are we to have it done by a competent board and rely on public beneficence for support? But first I will describe where our failing and weakness lies. The first question that presents itself to our notice is, what is art education? Was there ever a more misconstrued question than this? To the vast majority it is nothing more than having their sons and daughters (especially daughters) learn how to "paint by hand," with the result that they are disgusted with themselves for having spent so much money to so little purpose, or, as in perhaps the majority of cases, so conceited in their belief in the wonderful attainments of their children as to be lead to conclude that the limit of art education has been reached, and thus they remain ignorant of the necessity and usefulness of such education.

As for their sons becoming artists—No! No! Keep them away from it and poverty! This seems to be the general ideal of an art education in Canada, and it is by reason of this great misconception that we Canadians, with such grand possibilities, do not advance as we should. If we continue to disregard this branch of education, our industrial and commercial growth will be stunted.

But I have still faith to believe that the time is coming when this branch of education will be raised to its proper position, and have offered to it all the facilities and advantages necessary to its successful development.

Our Legislature must be approached and convinced by determined and practical arguments, that a different course to that of the present will have

* Abstract of paper read before the Toronto Art Students' League.

to be pursued, as our experience, short as it is, has proved conclusively that the whole system is wrong and detrimental to the prosperity of the country commercially as well as artistically.

What does true art education mean to the country? Just now the attention of everyone is directed to our enormous hidden wealth in the shape of mines of gold, silver, nickel, copper, iron, etc., and I believe there is a possibility of our producing marble of an excellent quality, all in such quantities as to make the scientific world wonder. Our neighbors across the line look at us with envious eye, coveting the prize we thus hold. Even now we are discussing the advisability of closer trade relations with them, so that we can ship the ore over and let them do the rest. The idea is ridiculous, and shows our lack of art education and our commercial weakness. Hear what Christopher Dresser has to say on the subject: "A wise policy induces a country to draw to itself all the wealth that it can *without parting* with more of its natural material than is absolutely necessary. It is better thus to part with but little material and yet secure wealth, than it is to part with the material at a low rate either in its native condition or worked into coarse and low priced articles and become impoverished."

Men of the lowest degree of intelligence can dig clay, iron or copper, or quarry stone, but these materials if bearing the impress of mind are ennobled and rendered valuable, and the more strongly the material is marked with this ennobling impress, the more valuable it becomes. By way of illustration we will take, not our valuable ore, but a common piece of clay—every day clay—of which we have such an abundance on the streets of this fair city of ours. In the hands of one man it becomes a drain tile or a common, ordinary flower pot worth five cents a piece—twenty five or fifty cents a dozen—in the hands of another man it becomes a vase or a decorative piece of ornament, worth how much—fifty cents a dozen? No! sold by the piece from one dollar up to twenty; yes, fifty or one hundred. What caused its greater value? Education—art education. In the first instance the man was simply a machine working for a day's pay, without the application of any brain power. In the other he had an art education, and consequently his work was ten, aye, a thousand times more valuable to the country, both commercially and artistically. Thus you see the country retained that much more wealth by one person's education. Take as another illustration our iron ore. I have said that our American cousins are looking at it with a covetous eye. They see to what value they can put it; how they can increase its value a thousand fold, and send it back to us in beautiful and useful forms, charging us a hundred times more than they paid us for it. They are better educated artistically, spending enormous sums every year adding to the facilities for art education. The result is, they are enriched commercially while we are impoverished, simply because we think it folly and waste of money to have anything to do with art education.

Look at our manufacturing industries—stove manufacturers and iron workers generally; furniture manufacturers, carpet weavers, wall paper manufacturers, glass stainers, lithographic workers, silver plate, stone carvers, decorators, etc.—a small army of industries who feel the want of home education, for lack of which they have to pirate the designs of our Yankee cousins and adapt them to their own wares, whereas had their workmen the proper facilities for study and reference, things would be entirely changed. Valuable men as designers, modellers, etc., would be retained in our country; new and original designs would be produced which would command a higher money value and a larger market. But why go on enumerating details?

I now come to consider the means whereby we may reach the desired end, or in other words, what system we should to adopt to further encourage and improve this branch of education. Art teaching or education under the present system will never be a success, because the forms of entrance examinations are ridiculously wrong. The awarding of prizes, medals, and especially teachers' certificates, is a farce. It seems as though the standard of the schools is to be gauged by the large number of pupils who receive diplomas, whereas I believe that is the best argument that can be used against it, because the majority of teachers who have passed these examinations are entirely incapable of educating the young mind in *true* art principles, consequently the very first principles the pupil receives are wrong and tend to kill any germ of art instinct that may be in him. Coutre, in his conversations on art, says in connection with the organization of Art Schools, that the elementary teaching which is of so much importance is usually confided to the least advanced amongst the teachers. This is a fatal error; no amount of diligence, however well directed, can make up for inexperience. It is not my intention to lay down any positive rules for the guidance and regulation of Art Schools, as I believe that should be done by a selected committee of qualified men, but merely to suggest a few qualifications that I think should be necessary.

In the first place, we must have a thoroughly qualified and enthusiastic board of directors who will have power to arrange classes, adopt their own rules and regulations for their guidance, and above all engage experienced teachers. I would also suggest the following general rules:—

That students be advanced from one class of work to another according to the personal judgment of the instructors without formal examinations.

A series of informal lectures should be given on various art matters, such as the history of the arts, technical processes employed in them, criticism upon decorative composition, anatomy.

That a certain number of free scholarships be established.

That the students be compelled to draw from the skeleton and the different bones composing it, as most of the principal bones show or suggest their form, and a knowledge of their natural size must be invaluable to the student.

Lastly, art students must have art food—intellectual, artistic nourishment.

The fact is we are starving, or rather, our abilities are being stunted for the want of artistic food; something upon which the mind may feed—something to gratify the eye. We are frequently hearing from our young men who go to the large cities in the United States and Europe that they are constantly having opportunities of seeing the works of masters in decorative work, such as stained glass, pottery, painting, etc. They inhale the atmosphere and are consequently benefited intellectually, artistically, and I might add physically, as the mind has acquired a satisfaction it has long craved for.

So we must have museums of good works—masterpieces of the various ages in all the arts—examples of which can now easily be obtained through the wonderful development of the graphic photo-reproducing processes. Our Government should make an annual grant for the purpose of collecting such works. Let us not be behind our sister colonies. What a grand example Australia is showing us; the Government grant some thousands of pounds annually on the art collections for their museums.

In conclusion, I will suggest something which might be done to give art students a stimulus and increase the interest in that branch of education. At present, in our city especially, there are quite a number of large public works in course of erection—The City Buildings, University, Parliament Buildings, etc. Some few weeks ago I was commissioned to take a look around the new Parliament Buildings to make sketches of interesting points, ornamental detail, etc. I wandered around with a feeling of disappointment that such a grand opportunity for appropriate decoration had been neglected. Although it is hardly justifiable to criticize the buildings in their present unfinished condition, still enough was completed to prove to me that quite an improvement might have been made in what is being done in the way of carving. I noticed that any panels or portions of the building with a suggestion of carving are being filled up with that common, very common, stereotyped piece of ornament which can be seen in almost every building that has been erected here within the past few years. Every dwelling of any pretensions has, seemingly without any motive, a little piece of this ornament either in terra cotta or carved in brown stone, all of which suggests to my mind that the stone carver is given full license to carve what he likes. I do not wish it to be understood that I find any grave fault with the present style of residential architecture; on the contrary, I must congratulate the architects of our city upon the strides that have been made of late in house building and decoration; and also the citizens upon their faith in and appreciation of the architects' and decorators' endeavors to create the beautiful, as evidenced by the many fine dwellings that have been erected in our city lately. We must exercise care even here, however, lest we err on the side of the ridiculous by employing too much meaningless decoration. I think I notice a growing tendency to plaster on ornament anywhere and everywhere without evidently the slightest thought of symmetry of design. In fact, some of our most costly houses are becoming monsters of ugliness.

I was speaking of the stereotyped and meaningless pattern of design used as ornament on the Parliament Buildings. Instead of all this scroll ornament, why not use, invent or cause to be invented, some new conventionalized ornament of Canadian wild flowers or *bas relief* of historic and allegoric events in Canadian history. Had we properly organized Art Schools and museums, inducements might be offered to pupils to submit designs for the different portions of such buildings. Even though a number of them might not be practical, something might be gleaned from

them to suggest a good design, and I'm sure that some gratifying results could in this way be reached. Such action would result in giving great stimulus to art education.

Although too late for the outside work on the Parliament Buildings, there will be a great amount of interior decoration where some special inducements might be offered for designs; or, without going to such a high standard as should be required for this work, why not take a suggestion from Ruskin and offer prizes for the decorating of our Public School interiors which, with their bare walls, are an eyesore, and as for their outside appearance, the less said the better.

MODE OF MAKING FINE PRESS BRICK.

GEORGE CARNELL, of Philadelphia, Pa., the well-known manufacturer of hand and power brick presses gives the following concise directions for making fine front bricks:

1. It is important that the clay be well tempered, a clay tempering wheel producing the best.

2. It is necessary to have sheds built expressly for that purpose, the roof being made so it can be opened to admit sun and wind; when required doors are also made to protect the sides of the shed in case too high winds prevail. In sheds built this way, the bricks can be dried with better regularity.

3. The bricks should be moulded free from flaws or sand cracks; the moulds, when in use, must be kept well cleaned by the off-bearer, as the accumulation of sand or dirt on the sides of the moulds, if not scraped off, will make a variation in the sizes of the bricks when they come to be pressed.

4. The bricks are placed on the floor to dry. When nearly dry, a light sieving of sand is put over their faces and they are then turned over that they may dry more regular. When the bricks dry too fast, a damp carpet can be placed over them and sprinkled occasionally with water.

5. When the bricks are ready for pressing, say when they can be handled without finger marks, the press is then taken to the bricks (or *vice versa*); the bricks are then carefully placed in the press mould, care being taken that they are not marked while dropping them in. The bricks must be kept free from finger marks.

6. The mould, plate and lid should be kept clean; a sharp-pointed hard wood stick is best to clean the corners of the mould out with. This should be done, and the mould wiped out every few bricks; occasionally it will be found necessary to raise the bottom plate and scrape the dirt from around the sides; after cleaning, apply a little oil.

7. From the press the bricks are carried with paddles and laid on their flats, about six high.

8. When the bricks are partly dried, they are rubbed carefully with the hand, and hacked on their edges, pigeon-hole shaped, for drying. By pigeon-hole hacking, we mean placing the bricks two on two, and reversing them every course. After they have become hard enough to handle without danger of injuring them, they are placed on a barrow, with pieces of soft carpet or blanket between the courses; they are then hacked in sheds and are ready for the kiln.

9. After the day's pressing is finished, take the plate and plunger out of the mould, scrape all the dirt off, wipe clean and oil the mould, plate and plunger. By keeping the press and mould clean it will give better satisfaction.

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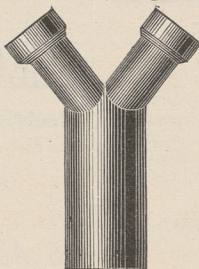
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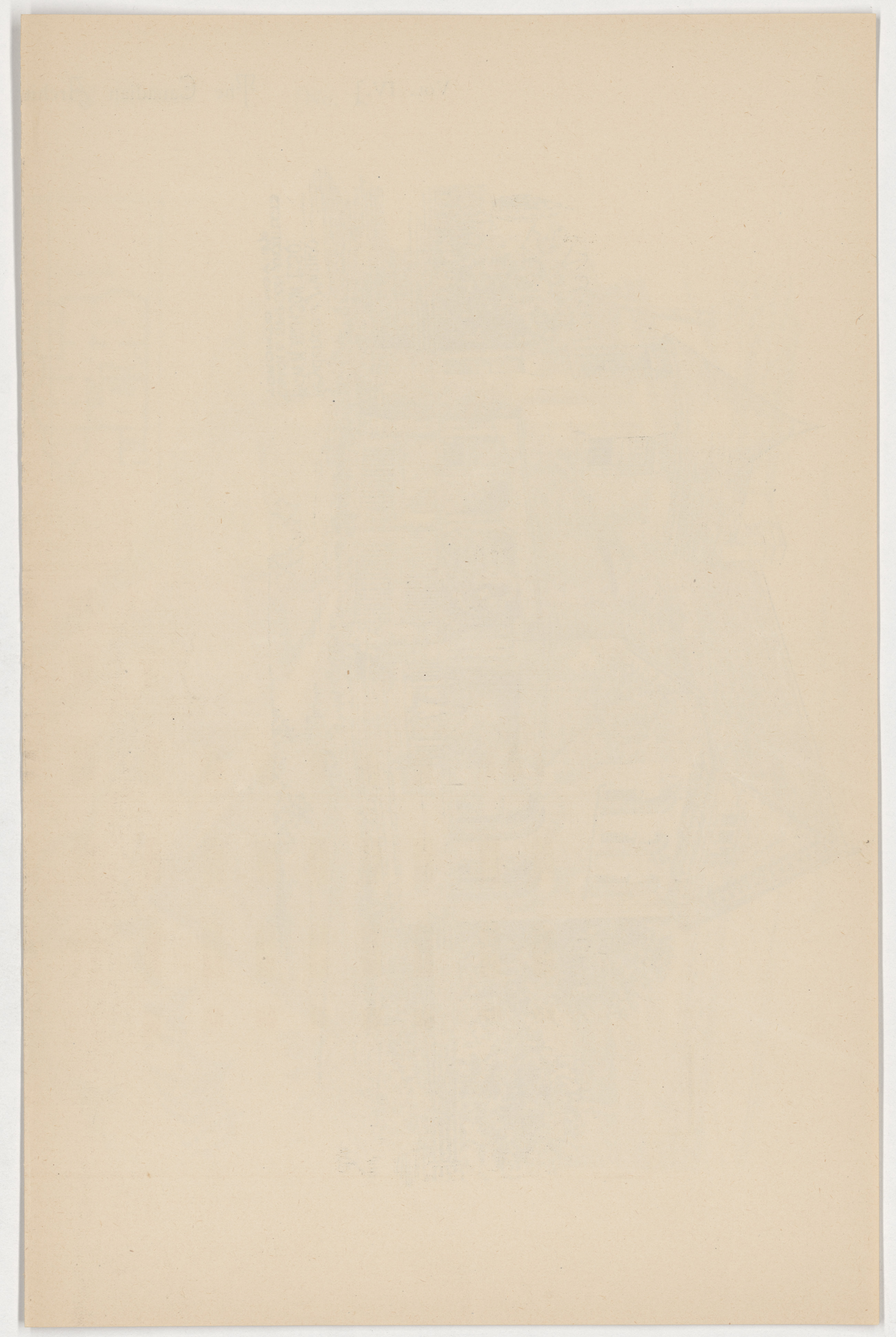
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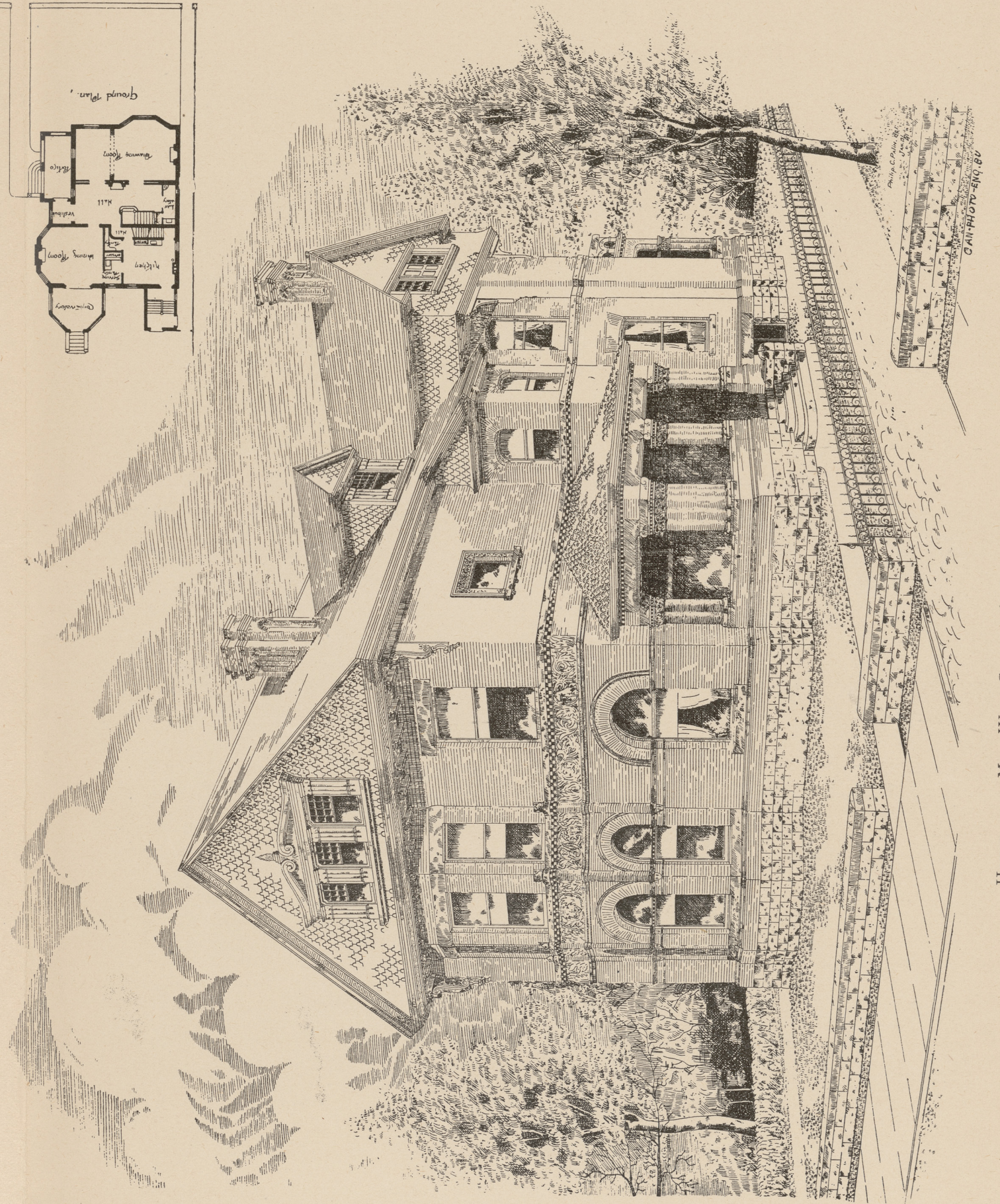
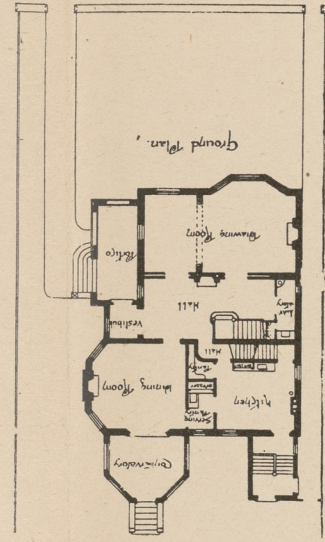
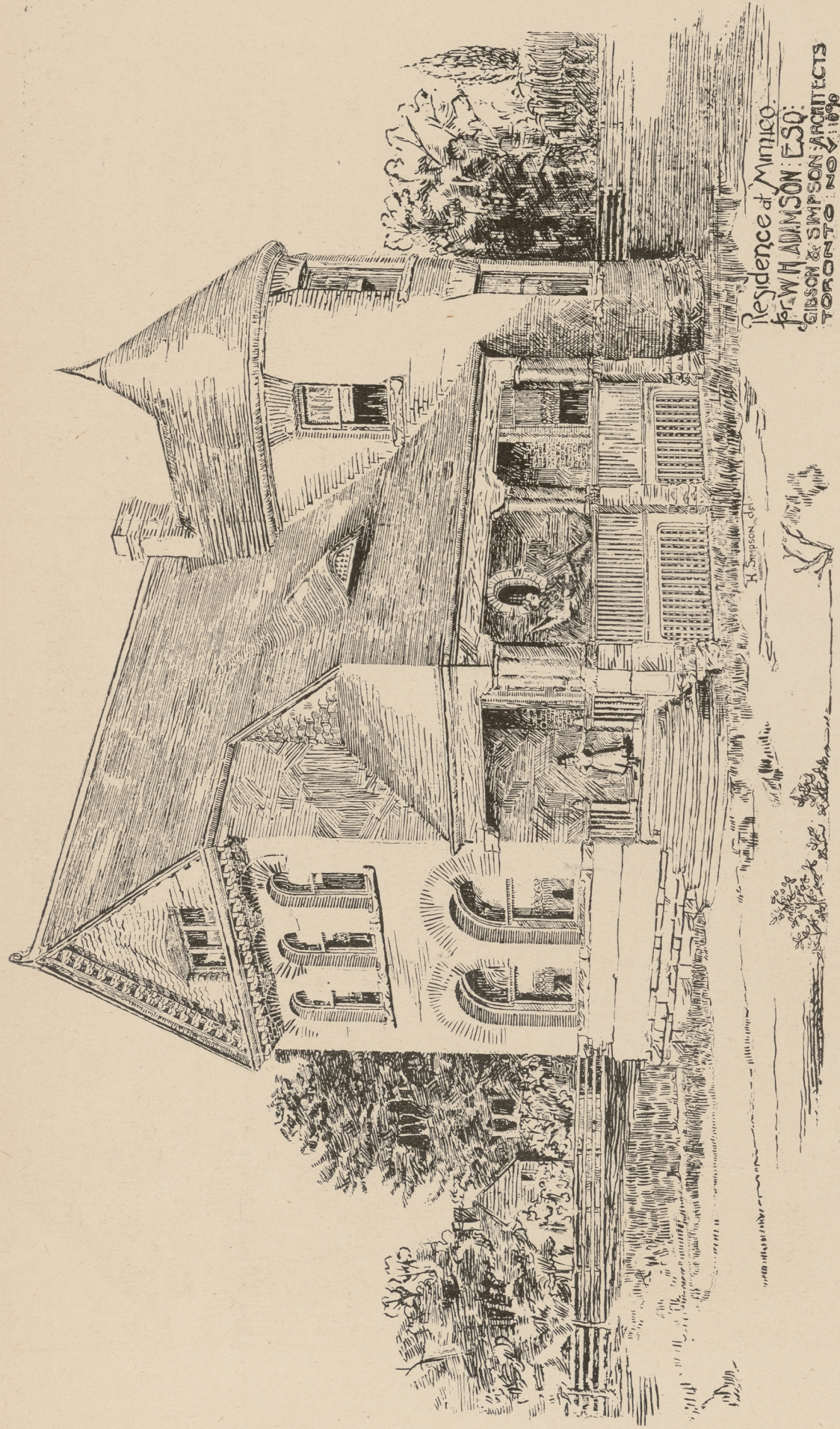
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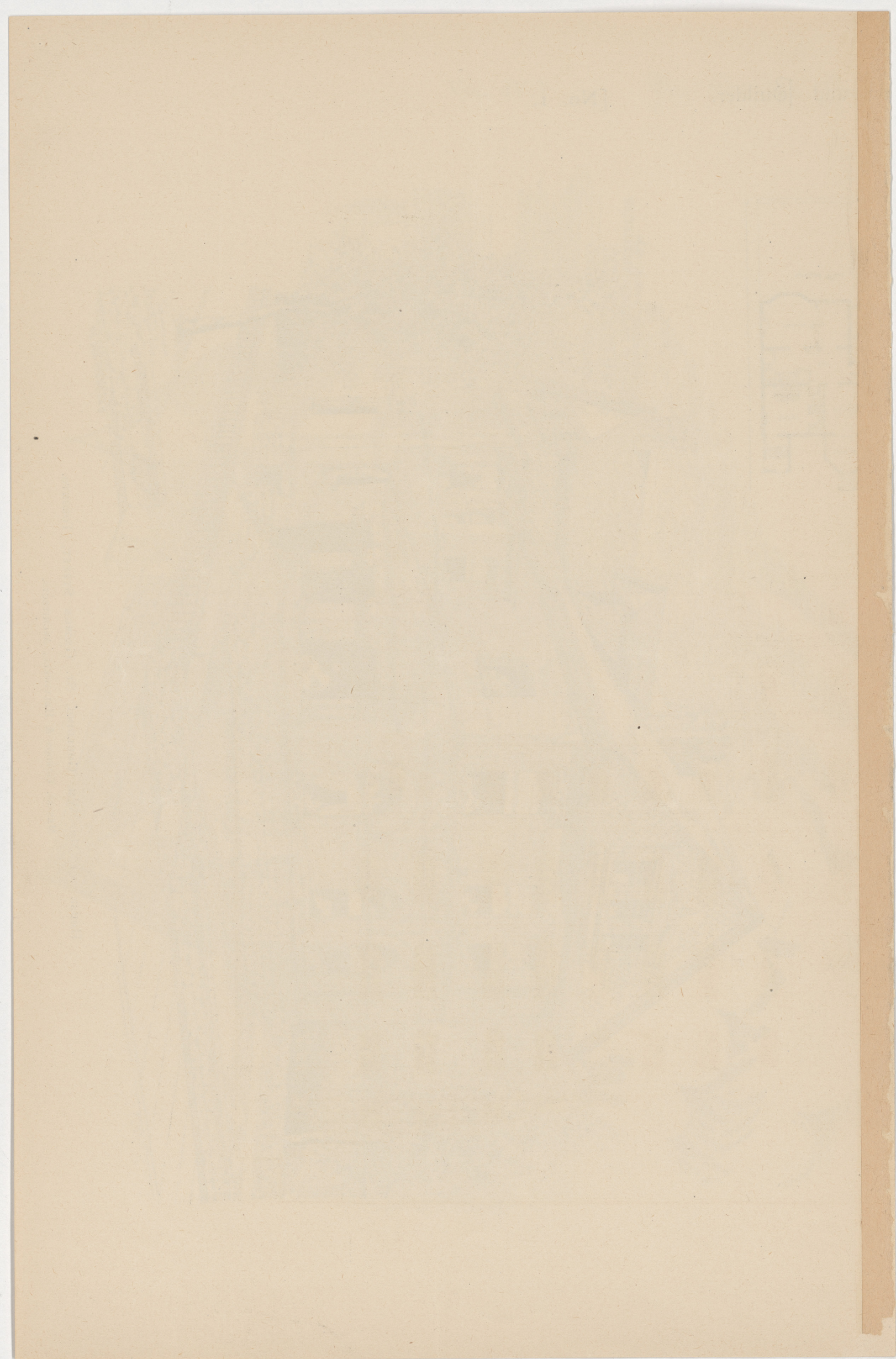
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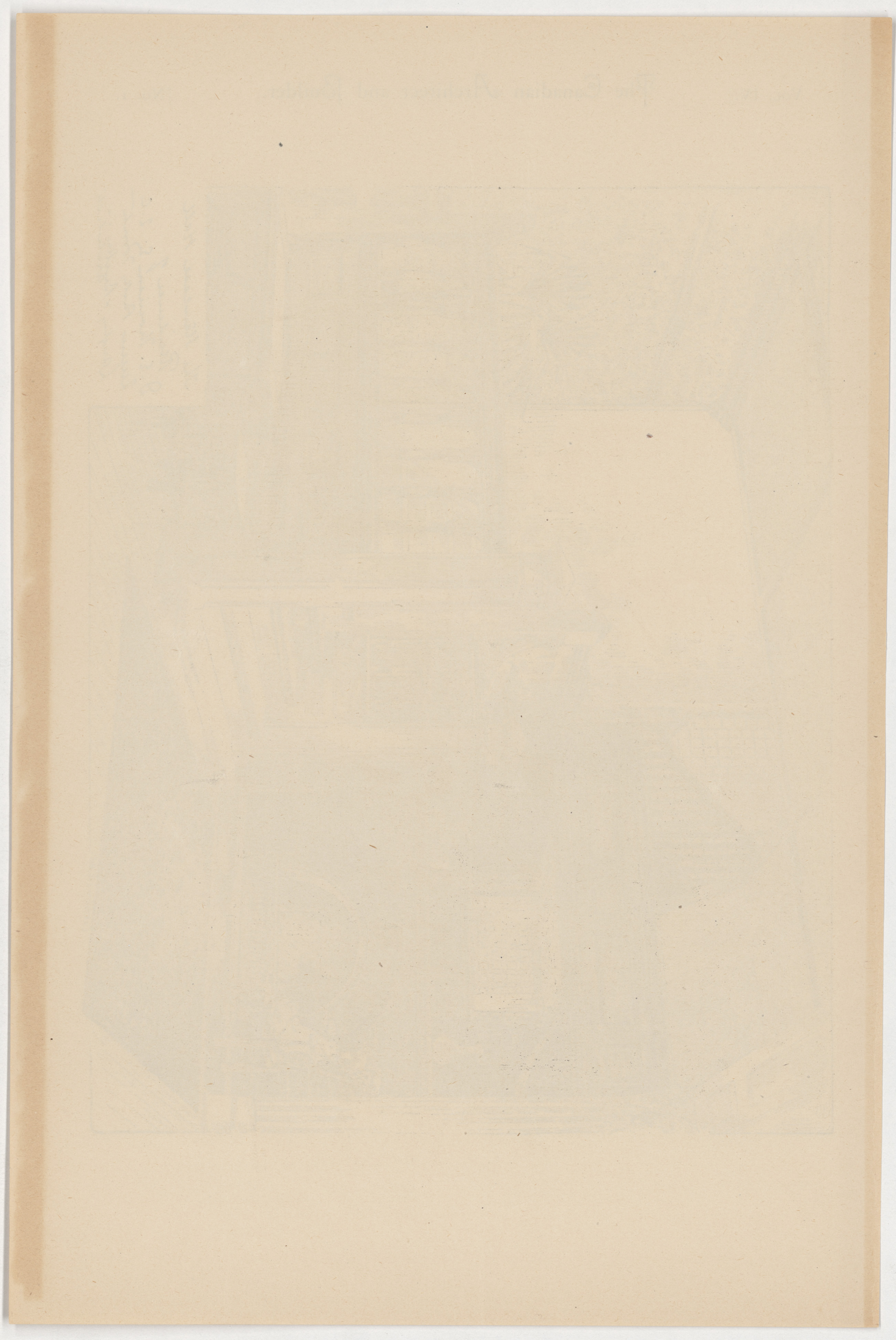
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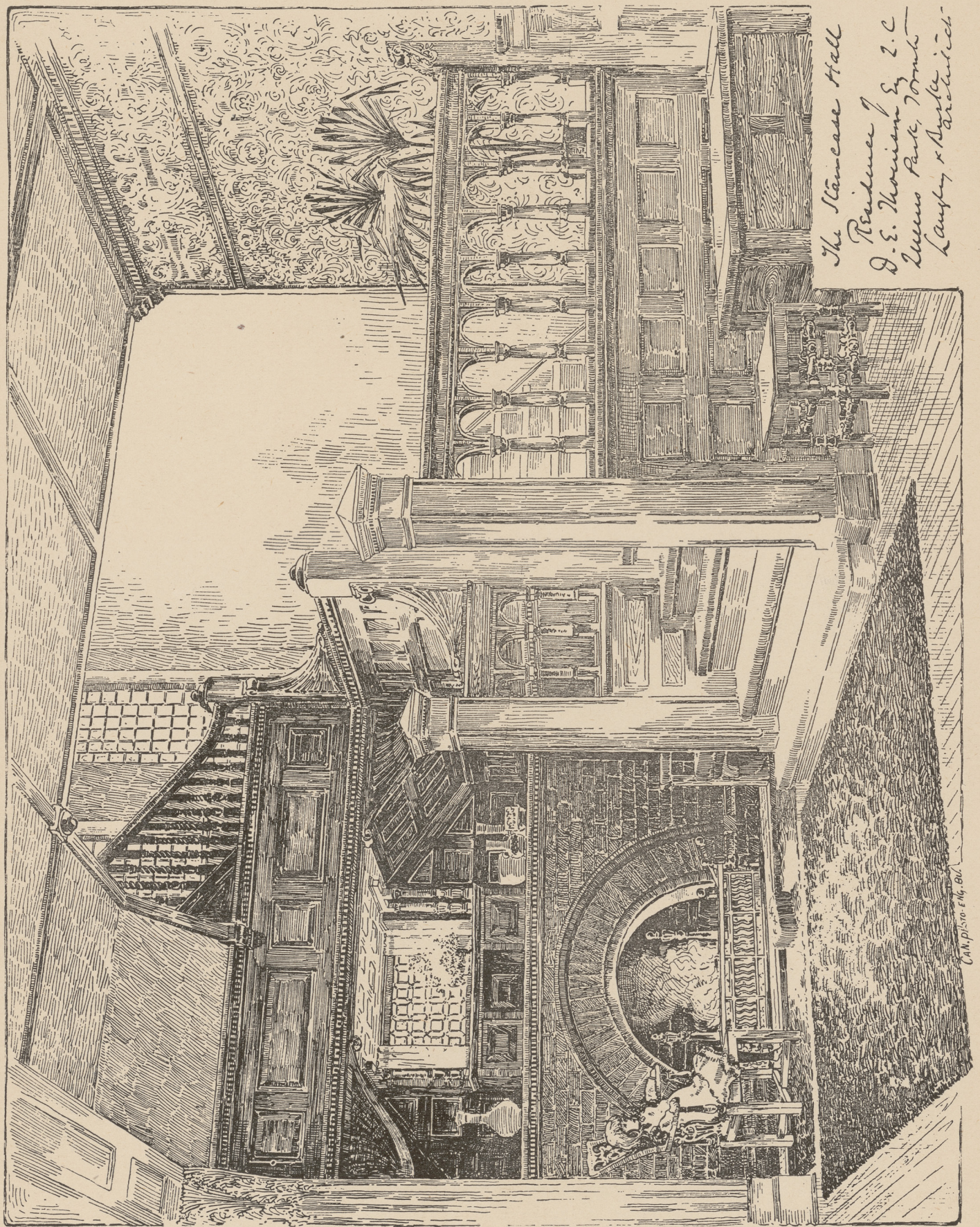
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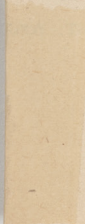
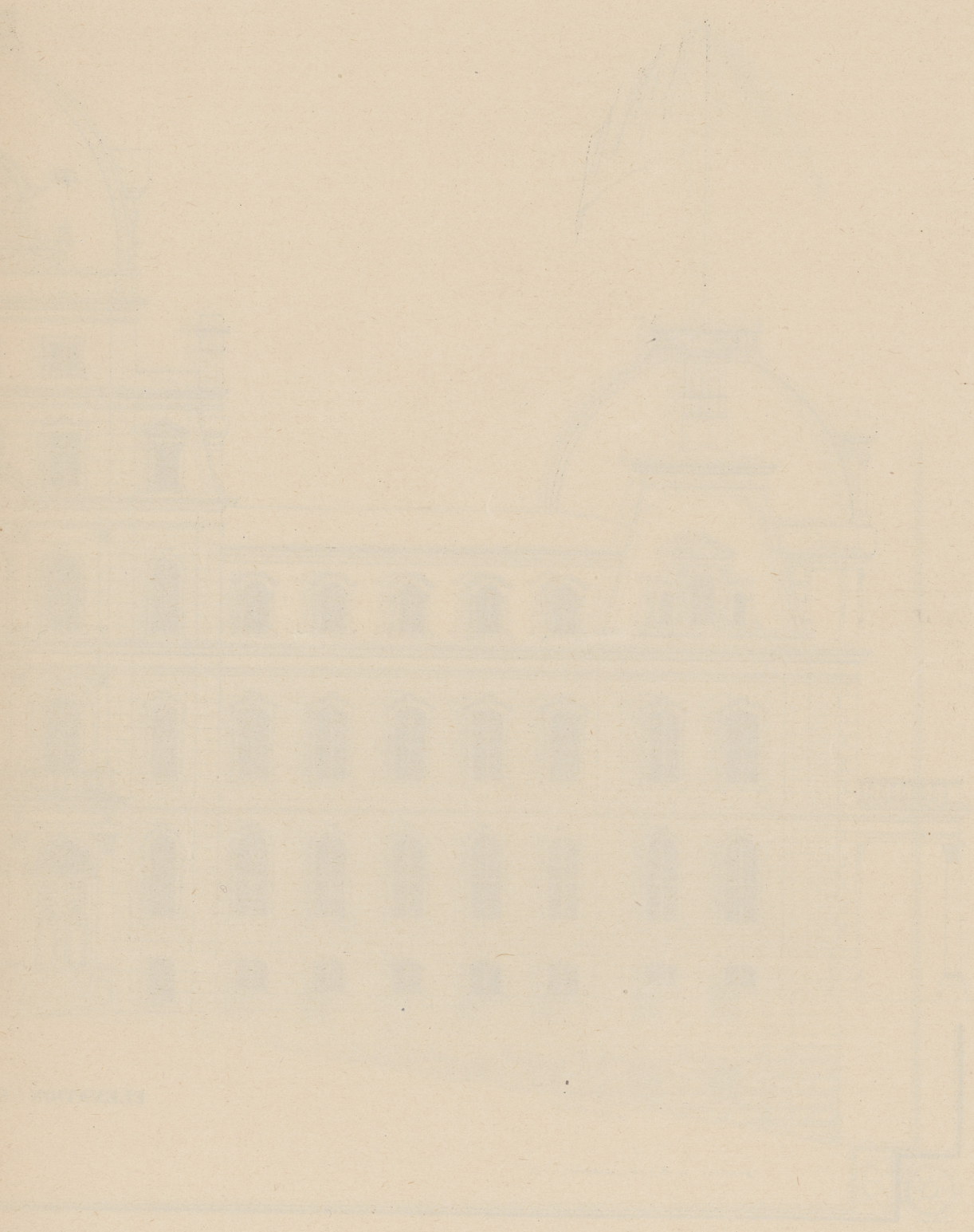


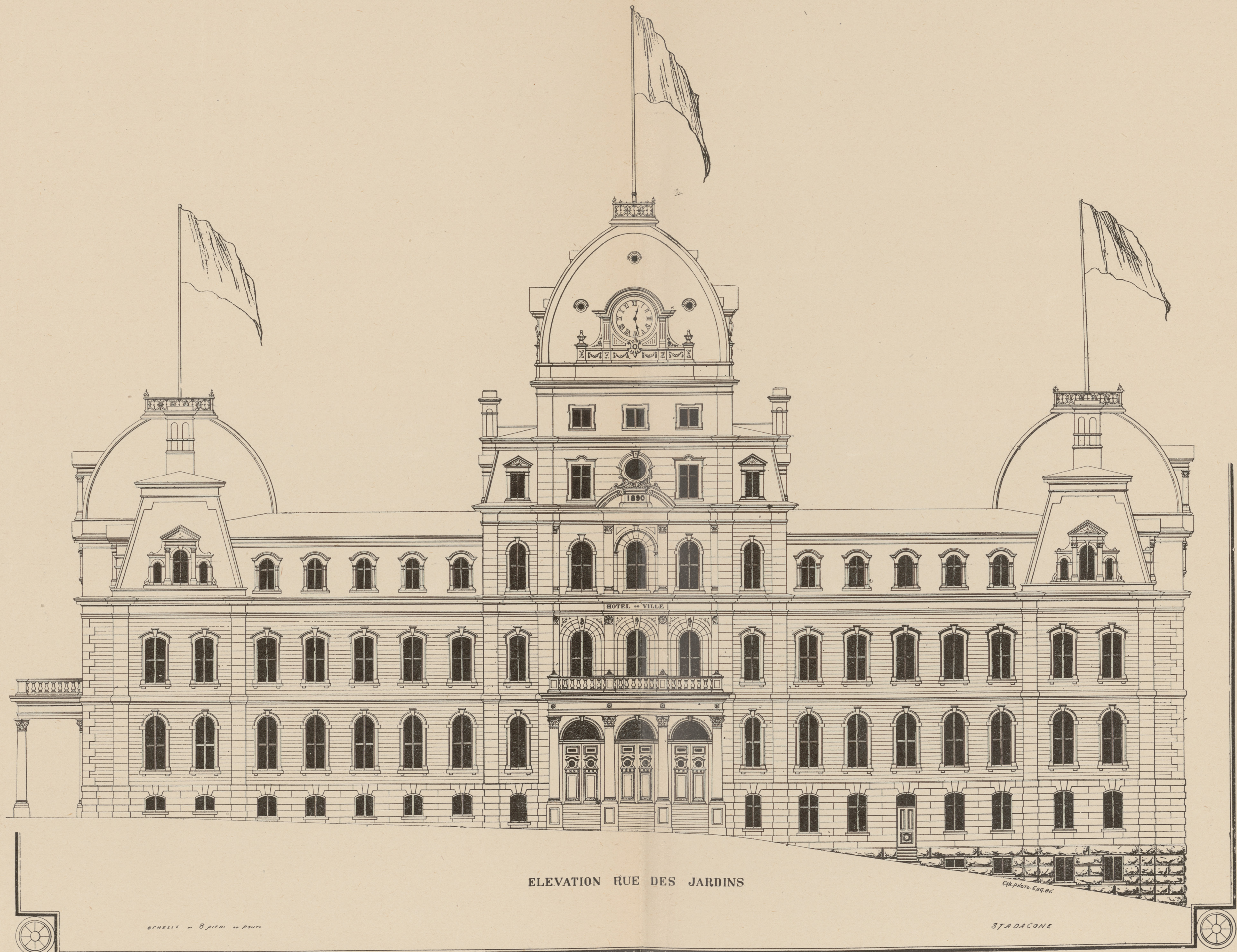




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